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FOREST INSECT INVESTIGATIONS

FOREST INSECT CONDITIONS WITHIN THE
GRAND TETON NATIONAL PARK WITH RECOMMENDATIONS
FOR CONTROL - 1933

by
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INTRODUCTION

The purpose of this report will be to present the status of forest insect conditions within the Grand Teton National Park, as observed by the writer in 1932. This report will contain a brief summary of existing situations, with recommendation for control, and will only include such data as considered essential for complete descriptions.

1932 CONTROL OPERATION

A light infestation of the mountain pine beetle in the lodgepole pine stands adjacent to Jenny's Lake was discovered during the summer of 1931. Though this infestation was not alarming, in view of the scenic value of the forest at stake as well as the small sum of money involved, it was recommended that these trees be treated in the spring of 1932. This project was conducted during the first twelve days of June and was under the direct supervision of Park Ranger Hayden. Mr. A. L. Gibson, Assistant Entomologist, Bureau of Entomology, spent a week with Ranger Hayden, assisting with the spotting and general administration of the project. During this operation, 235 infested trees were felled and burned at a cost of \$1.96 per tree, exclusive of contributed time of Messrs. Hayden and Gibson. An inspection of this project was made in September, which showed both the spotting and treating to have been very thoroughly performed. However, many of the trees were but lightly infested,

with correspondingly light broods, indicating that the infestation was not a great deal above what would be called a normal condition.

REEXAMINATION OF LODGEPOLE STANDS

This area was reexamined in September, 1932, by an extensive strip survey. During this examination the writer was assisted by Chief Ranger Hanks, who ran compass and paced the distances covered. Twenty-six and one half miles of strip were run in these areas, with no 1932-attacked trees being recorded. These negative data do not mean that there are no infested trees within the area but do indicate that the infestation is very light, being what would be considered as a normal infestation. One or two lightly attacked trees were recorded by the writer along trails, etc. which were off strip so were not recorded. From the data secured it would seem that the control operation of 1932 was very effective in reducing the very light infestation which existed upon the area at that time to a still lower level.

MOUNTAIN PINE BEETLE INFESTATION IN WHITEBARK PINE

The Grand Teton Park is composed primarily of steep, majestic mountains. There is of course a marked variation in the timber types found within its boundaries. The lower levels are stocked with a rather pure stand of mature lodgepole pine. At an elevation of about 7,000 feet the lodgepole is replaced by Douglas fir, which in turn gives way to whitebark pine at about 8,000 feet. This latter type extends to timberline, or about 10,000 feet. An infestation of the mountain pine beetle is present within these areas of whitebark pine, which varies in severity for the different units.

This infestation is not peculiar to the Grand Teton Park, as it extends northward through the Yellowstone Park and Gallatin Forest, and is also found throughout the Teton and Wyoming National Forests to the south, with perhaps unrecorded outbreaks at a still greater distance. For the most part, these timber stands have but little commercial or scenic value, so the high cost of treatment due to the inaccessibility of the areas could only be justified from the viewpoint of preventing the infestation from spreading into more valuable lodgepole pine forests adjacent. However, on the Grand Teton a different situation exists. Scenic trails have been constructed from the floor of the valley up the mountain sides to the very foot of the immense rocks comprising the peaks of the mountains. This is especially true of the Glacier Trail, which leads to Surprise Lake and Teton Glacier. Along this trail, between an elevation of 8,000 feet and timber line, a heavy infestation of the mountain pine beetle in whitebark pine exists. It is believed that the injury to the trees resulting from the heavy blasting associated with the construction of the new trail resulted in a concentration of the infestation, as the outbreak is apparently a great deal heavier within this area than in any other portion of the park. Time was not available for the writer to make a complete survey of this timber type, so the responsibility for the task was assumed by the Park Service. This survey was made, the substance of which is contained within the following letter:

"Re your letter of October 12, our Chief Ranger Hanks and Ranger Hayden have just submitted a complete report regarding our pine beetle infestation, which I am passing on to you practically word for word, as follows:

'It is evident that the white bark pine occupies an area along the entire east slope of the range, beginning at an elevation of about 8,000 feet and being the predominant forest cover type from this

elevation to timberline which is about 10,000 feet, covering a region which in general is quite inaccessible.

'From investigations recently completed we have reached the conclusion that this infestation occurs in an endemic condition over nearly all of this area. It is considerably more in evidence in those regions traversed by trails and no doubt injuries received during trail construction have weakened many trees to the extent of rendering them more susceptible to attack. An approximate 10% cruise of the Teton Glacier Trail slope disclosed 63 infested trees; a similar cruise on the Tee-win-ot slope disclosed 7 trees, on the Moran slope 13 trees, the Buck Mountain slope 9 trees and the Death Canyon Trail slope 19 trees.

'From a scenic standpoint it seems imperative that a complete disposal be made of treated trees along the trails, a factor greatly increasing the cost of treatment. We feel that \$4.50 is a conservative per tree estimate. Should you feel that a partial control project is justified we believe that the foregoing figure would apply, to the best of our knowledge, to those regions accessible by trail.'

As a result of this survey it would seem that the Teton-Glacier Trail unit is the only one for which control should be considered at this time. However, before making final recommendation there are several angles to such a project which should be carefully considered.

The Teton-Glacier Trail unit is not an isolated body of timber. There are other infested areas within the park as well as a general infestation throughout the different forests of that territory. However, from available data it would seem that this unit did contain the heaviest infestation. No assurance could be given that the benefits accruing from such work would not be lost through flights of insects into the treated area from infested areas adjacent.

Unfortunately it is impossible to submit any evidence for or against the institution of this project. The outbreaks of the mountain pine beetle which now exist within the whitebark pine areas of this territory are the first which the Bureau of Entomology has been permitted to study, so very little is known relative to this type of infestation.

To know the origin of these outbreaks would be valuable knowledge and would of course determine the advisability of control. There is evidence to show that the insects have been present within the areas for many years, and it is possible that the outbreaks occurred locally due to the breaking down of some factor responsible for the holding of the insects in check. On the other hand, some of the marked increases which have occurred during the past two years are somewhat difficult to explain as having originated from the previous year's infestation. With this lack of information it is not known if the infestation will spread from one whitebark pine area to the other, though there would seem to be no reason to assume that they would not. Furthermore, we do not know if with the depletion of the whitebark pine stands the insects will move into the lodgepole pine forests adjacent. Such a spread involves an interchange of hosts, which it is sincerely trusted will not occur. The uncertainty of success with this project would place the institution of control within the Teton-Glacier Trail unit in the light of an experiment, with no assurance that the benefits secured from control would not be subsequently lost through flights of insects from adjacent areas.

The problem of determining if the chances of success, with the value of the experimental data to be gained, are sufficient to warrant the necessary expenditure, is a difficult one. Though no assurance of success for this project can be made, in its institution there would not only be valuable experimental data available, but an attempt would have been made to preserve the valuable scenic forest at stake.

Park Rangers Hanks and Hayden have estimated that there are some 630 infested trees in this area which could be treated for \$4.50 per tree.

Though of course the writer has no reason to question these data, it would seem that both the estimated number of infested trees as well as the cost of treatment is too high. I hesitate to question these data, as my only basis is a very extensive examination; however, I am quite sure that these trees can be treated for less than \$4.50 per tree.

RECOMMENDATIONS

Lodgepole Pine Stands

Though there are a few lightly-infested trees scattered throughout the area, there are not very many, and the infestation would not be considered as being anything but in an endemic condition.

Whitebark Pine

Though in the institution of control for the Teton-Glacier Trail area there can be no assurance or guarantee of success, it would seem that the scenic value of the timber stand, with the experimental value of the project, would justify the necessary expenditure. It is only through projects of this character that we can secure data essential in the successful planning of future projects. The thorough treatment of the infested trees within this area, which should be by felling and burning, will determine if comparable situations can be placed under control.

Though it is realized that the success of this project is very doubtful, it is recommended that the sum of \$2,000 be allotted for the treatment of the infested trees within this unit, and that the work be conducted as early in the spring of 1933 as possible.

Respectfully submitted,

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Entomologist